BASIC ELECTRONICS

2nd Exam/ECE/CSE/IT/MECHATRONIC/0190/May'19

(FOR 2018 BATCH)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Do as directed. **15x1=15**

a. Under normal operating voltages the reverse current in a silicon junction diode is in_____
b. Ripple factor in full wave rectifier is_____
c. CMOS means_____
d. Write the relation between α and β.
e. Biasing in transistor is done to stabilize the_____
f. At absolute zero temperature an intrinsic semiconductor behaves like_____
g. In saturation region both junctions of transistors are _____Biased.
h. When a P-N junction is heavily doped its breakdown voltage will _____
i. Operation of JFET involves _____carriers.
j. Boron has _____valence electrons.
k. An ideal diode has _____forward resistance.
l. The ideal value of stability factor is_____
m. The communication path in an FET through which the carriers flow between drain and source is called_____
n. A capacitor circuit does not allow passing _____component.
o. The material used for the construction of LED is _____band gap.\

SECTION-B

Q2. Attempt any five questions. **5x6=30**

i. Compare the MOSFET and BJT.
ii. Explain the behavior of P-N junction under different bias conditions.
iii. Draw h- model of CE amplifier.
iv. Describe the importance of load line with suitable diagrams.
v. Explain the terms avalanche and zener breakdown.
vi. Give advantages and applications of CMOS.
vii. Derive the relation $I_C = \alpha I_E + I_{CBO}$ and explain different terms used in them.
viii. Write a note on drift and diffusion currents.
ix. What is a filter circuit? Explain the working of LC filter.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Compare CB, CE and CC Configurations with at least five parameters.
b. With the help of diagram and waveforms, Explain working of Center tap full wave rectifier.
c. Explain the divider method of biasing for transistor (CE).
d. Write a short note on any two of the following:
    i. Thermal Runaway
    ii. Varactor diode (Symbol, operation, application)
    iii. BJT as an amplifier.
e. Explain Construction, operation and characteristics of a MOSFET in depletion and enhancement modes.